Hardware Reference Guide

HP Compaq t5135/t5530 Thin Clients

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Hardware Reference Guide

Business PCs

First Edition (January 2007)

Document Part Number: 437853–001

About This Book

WARNING! Text set off in this manner indicates that failure to follow directions could result in bodily harm or loss of life.

CAUTION Text set off in this manner indicates that failure to follow directions could result in damage to equipment or loss of information.

NOTE Text set off in this manner provides important supplemental information.

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1 Product features

Standard features

Thank you for purchasing an HP Compaq thin client. We hope you have years of use from our t5135 or t5530 thin clients. Our goal is to provide you with award-winning clients that are easy to deploy and manage with the power and reliability you expect.

HP has partnered with Altiris to manage HP Compaq thin clients. Altiris Deployment Solution is a leading-edge tool to help with quick deployment and for ongoing management of the thin clients in your organization. Each HP Compaq thin client is recognized by the Altiris Deployment Solution as a supported device. As a result, you need not track license compliancy for each device. For additional information about the Altiris Deployment Solution tool, refer to the *Altiris Deployment Solution* insert that shipped with the thin client and the *Deployment Solution User Guide* that is available at http://www.altiris.com/documentation.

The next sections describe the features of the thin client. For a complete list of the hardware and software installed on a specific model, visit http://h18004.www1.hp.com/products/thinclients/index.html and search for a specific thin client model.

The following features are common to all HP thin clients:

- no moving parts
- no hard drives or diskette drives
- 5-minute setup time
- central deployment and management using Altiris Deployment Solution

Various options are available for your thin client. For more information about available options, visit the HP Web site at http://h30143.www3.hp.com/configure2.cfm

Front panel components

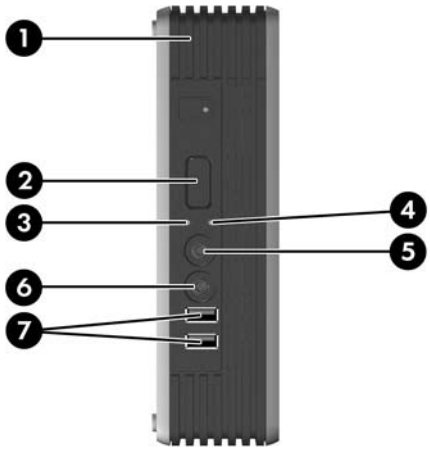

Figure 1-1 Front panel components

(1)	Secure USB compartment	(5)	Line-out (headphone) audio connector
(2)	Power button	(6)	Line-in (microphone) connector
(3)	Flash activity LED	(7)	Universal serial bus (USB) connectors (2)
(4)	Power LED		

* For more information, refer to the model-specific QuickSpecs at http://h18004.www1.hp.com/products/quickspecs/QuickSpecs_Archives/QuickSpecs_Archives.html

Secure USB compartment ports

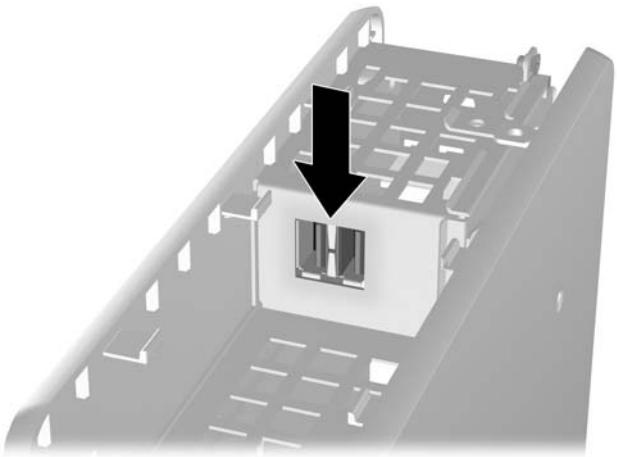

Figure 1-2 Secure USB compartment ports

The secure USB compartment allows you to use two USB devices in a secured location.

Rear panel components

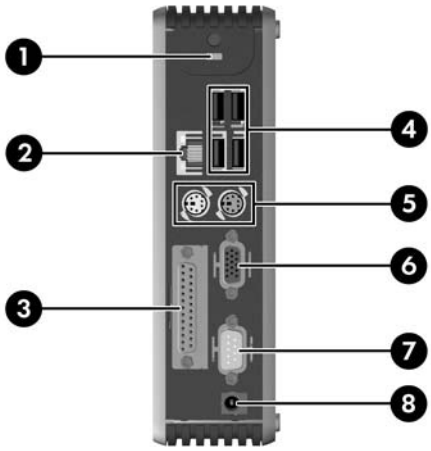

Figure 1-3 Rear panel components

(1)	Cable lock slot	(5)	PS/2 connectors (2)
(2)	Ethernet RJ-45 connector	(6)	Monitor connector
(3)	Parallel connector	(7)	Serial connector
(4)	Universal serial bus (USB) connectors (4)	(8)	Power connector

For more information, see the model-specific QuickSpecs at http://h18004.www1.hp.com/products/quickspecs/QuickSpecs_Archives/QuickSpecs_Archives.html

Installing the stand

To install the stand:

1. Turn unit upside down.
2. Locate the slots on the bottom of the unit into which the tabs on the stand fit.
3. Insert the tabs into the slots (1), and then slide the stand about 1/2–inch toward the back of the unit until it locks into place (2).

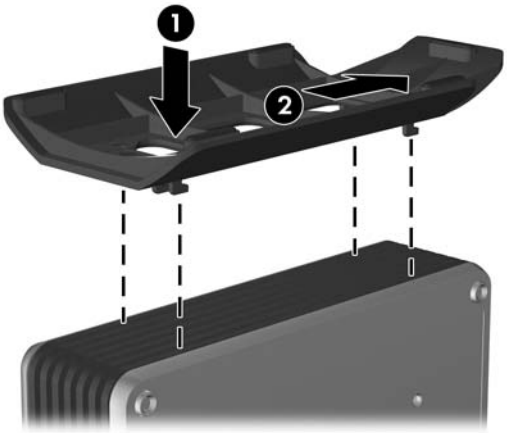

Figure 1-4 Installing the stand

Removing the stand

To remove the stand:

1. Turn unit upside down.
2. Press the tab (1), and then slide the stand about 1/2–inch toward the front of the unit and lift the stand off the unit (2).

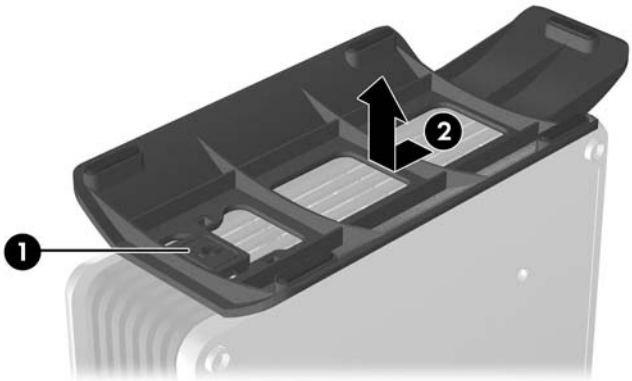

Figure 1-5 Removing the stand

Using the keyboard

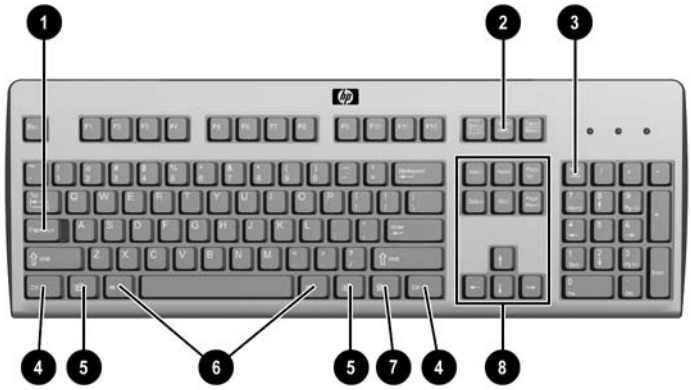

Figure 1-6 Keyboard features

(1)	Caps Lock key	Activates/deactivates the Caps Lock feature.
(2)	Scroll Lock key	Activates/deactivates the Scroll Lock feature.
(3)	Num Lock key	Activates/deactivates the Num Lock feature.
(4)	Ctrl key	Use in combination with another key; its function depends on the application software you are using.
(5)	Windows Logo Key[1]	Opens the **Start** menu in Microsoft Windows. Use in combination with other keys to perform other functions. For more information, see Windows Logo Key.
(6)	Alt key	Use in combination with another key; its function depends on the application software you are using.
(7)	Application key[1]	Similar to the right mouse button, opens pop-up menus in a Microsoft Office application. May perform other functions in other software applications.
(8)	Editing keys	Includes the following: Insert, Home, Page Up, Delete, End, and Page Down. Hold Ctrl and Alt while pressing Delete to restart the thin client.

[1]Available in select geographic regions.

Windows Logo Key

Use the Windows Logo Key in combination with other keys to perform certain functions available in Windows operating systems.

Windows Logo Key + Tab	Switch between open items.
Windows Logo Key + e	Open My Computer.
Windows Logo Key + f	Search for a file or folder.
Windows Logo Key + Ctrl + f	Search for computers.
Windows Logo Key + m	Minimize all windows.
Windows Logo Key + Shift + m	Undo minimize all.
Windows Logo Key + Break	Display the System Properties dialog box.
Windows Logo Key + r	Open the Run dialog box.

Additional function keys

The following key combinations also work on HP Compaq t5135/t5530 thin clients:

Alt + Esc	Cycles through minimized applications.
Alt + Tab	Cycles through open applications.
Alt + Shift + Tab	Switches to the previous session.

Special mouse functions

Most software applications support the use of a mouse. The functions assigned to each mouse button depend on the software applications you are using.

Serial number location

Every thin client includes a unique serial number located as shown in the following illustration. Have this number available when contacting HP customer service for assistance.

Figure 1-7 Serial number location

2 Hardware changes

General hardware installation sequence

To ensure the proper installation thin client hardware components:

1. Back up any data, if necessary.
2. If the thin client is powered on:
   a. Turn the unit and any other attached devices off.
   b. Disconnect the power cord from the wall outlet.
   c. Disconnect any external devices or cables.

WARNING! To reduce the risk of personal injury from electrical shock and/or hot surfaces, be sure to disconnect the power cord from the wall outlet and allow the internal system components to cool before touching.

WARNING! To reduce the risk of electrical shock, fire, or damage to the equipment, do not plug telecommunications or telephone connectors into the network interface controller (NIC) receptacles.

CAUTION Static electricity can damage the electronic components of the thin client or optional equipment. Before beginning these procedures, ensure that you are discharged of static electricity by briefly touching a grounded metal object. See Preventing electrostatic damage for more information.

3. Remove any hardware that you will replace.
4. Install or replace equipment. For removal and replacement procedures, see the following sections:
   - Replacing the battery
   - Installing USB devices in the secure USB compartment

NOTE Option kits include more detailed installation instructions.

5. Reconnect any external devices and power cords.
6. Turn on the monitor, the thin client, and any devices you want to test.
7. Load any necessary drivers.

NOTE You can download select hardware drivers from HP at http://www.hp.com/country/us/eng/support.html.

8. Reconfigure the thin client, if necessary.

Installing USB devices in the secure USB compartment

The secure USB compartment allows you to install two USB devices in a secure location inside of the thin client. Along with providing a hidden location, the secure USB compartment can be locked by the optional security cable lock.

CAUTION The ambient temperature inside of the secure USB compartment can reach up to 55°C in worst case conditions. Make sure the specifications for any device you install in the compartment indicate the device can tolerate a 55°C ambient environment.

NOTE In addition to following these instructions, follow the detailed instructions that accompany the accessory you are installing.

Before beginning the installation process, review General hardware installation sequence for procedures you should follow before and after installing or replacing hardware.

Removing the secure USB compartment cover

Use the following procedure to remove the secure USB compartment cover.

WARNING! Before removing the secure USB compartment cover, ensure that the thin client is turned off and the power cord is disconnected from the electrical outlet.

To remove the secure USB compartment cover:

1. On rear of the thin client, remove the screw that secures the compartment cover to the unit (1).
2. On the front of the unit, push the compartment cover about 1/2–inch toward the back of the unit (2).
3. Remove the cover from the unit by first lifting the rear (screw side) of the cover, and then lifting the cover off the unit (3).

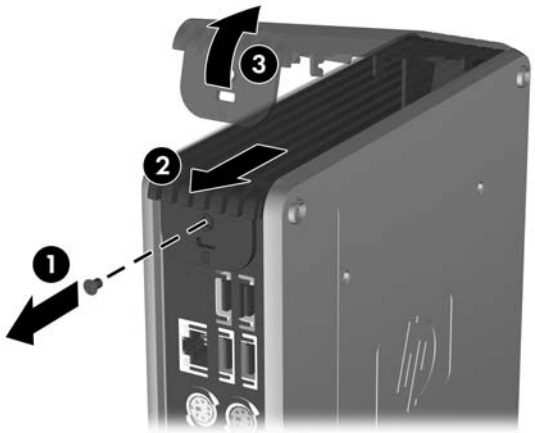

Figure 2-1 Removing the secure USB compartment cover

Installing the USB device

▲ Insert the USB device into the USB port in the secure USB compartment. See the following illustration for the location of the ports in the secure USB compartment.

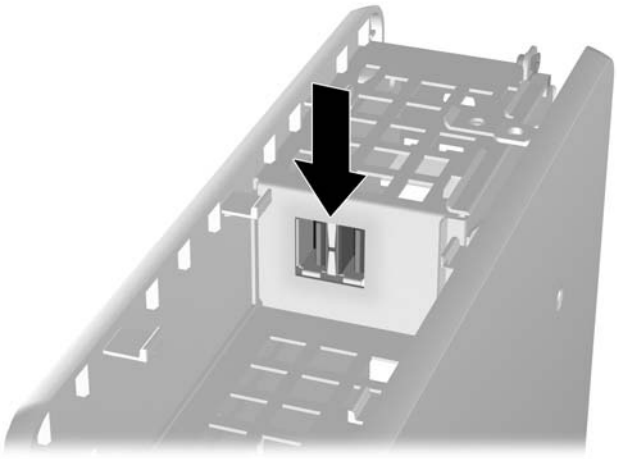

Figure 2-2 Secure USB compartment port location

Replacing the secure USB compartment cover

To replace the secure compartment cover:

1. Place the cover on top of the unit so it is offset about 1/2–inch toward the rear of the unit, allowing the tabs on the cover to align and insert into the slots on the chassis (1).
2. Slide the cover toward the front of the unit until it locks in place and the cover is flush with the front panel of the chassis (2).
3. Replace the screw (3).

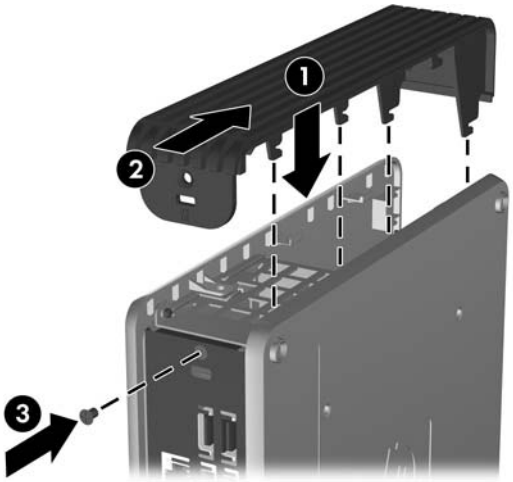

Figure 2-3 Replacing the secure compartment cover

To remove USB devices from the secure compartment, reverse the previous procedures.

Replacing the battery

Before beginning the replacement process, review General hardware installation sequence for procedures you should follow before and after installing or replacing hardware.

To replace the battery:

1. Remove the side access panel and metal side cover
2. Remove and replace the battery
3. Replace the metal side cover and side access panel

Removing the side access panel and metal side cover

WARNING! Before removing the side access panel, ensure that the thin client is turned off and the power cord is disconnected from the electrical outlet.

To remove the access panel:

1. Remove the secure compartment cover (1). For more information, see Removing the secure USB compartment cover.
2. Remove the two back panel screws that secure the access panel to the chassis (2).
3. Slide the access panel about 1/4–inch toward the front of the unit, and then lift the access panel up and off the unit (3).

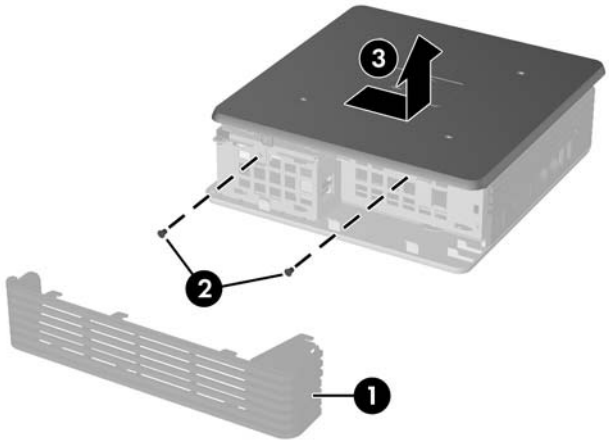

Figure 2-4 Removing the side access panel

To remove the metal side cover:

1. Remove the three screws that secure the metal side cover to the chassis (1).

2. Lift the metal side cover up and off the unit (2).

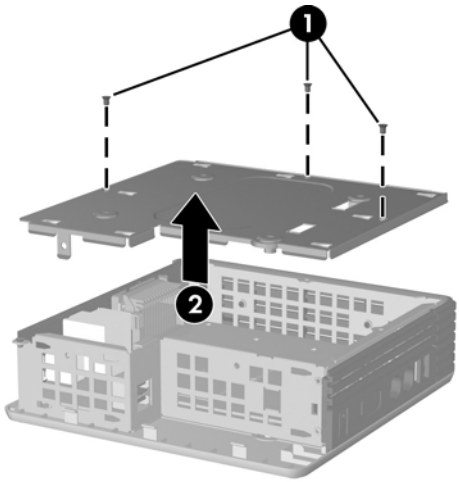

Figure 2-5 Removing the metal side cover

Removing and replacing the battery

To remove and replace the battery:

1. Locate the battery on the system board.
2. Pull back on the clip (1) that is holding the battery in place, and then remove the battery (2).

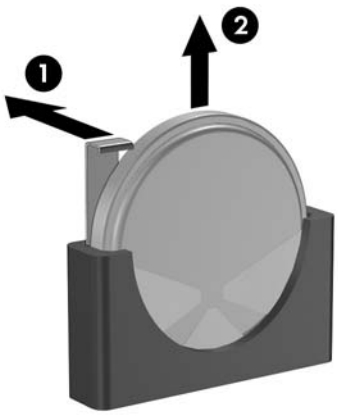

Figure 2-6 Removing and replacing the internal battery

3. Insert the new battery and position the clip back into place.

Replacing the metal side cover and side access panel

To replace the metal side cover:

1. Place the metal side cover on the chassis, making sure to align the screw holes in the cover with the holes in the chassis.

2. Insert and tighten the three screws.

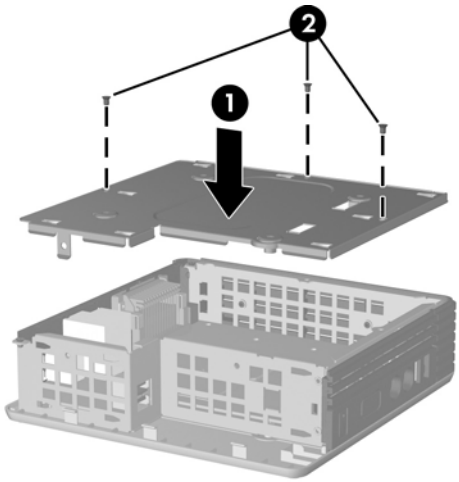

Figure 2-7 Replacing the metal side cover

To replace the access panel:

1. Place the access panel on the side of the unit, offset about 1/2–inch toward the front of the unit (1).
2. Slide the panel toward the rear of the unit until it locks into place (2).
3. Replace the two screws that secure the access panel to the chassis (3).

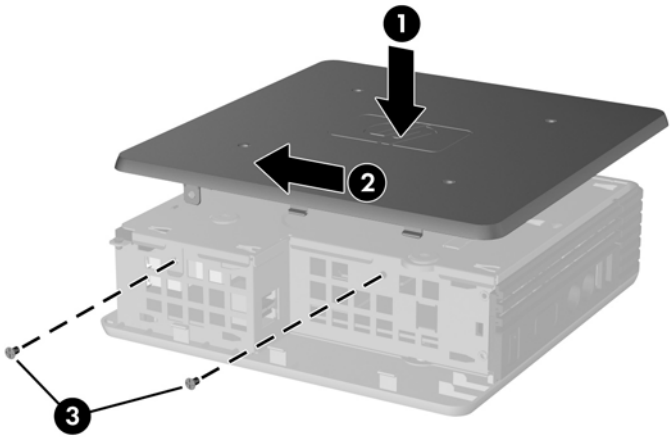

Figure 2-8 Replacing the side access panel

External drives

Various external USB drives are available as options for the t5135/t5530. For more information about these drives, visit http://www.hp.com/products/thinclientsoftware, or refer to the instructions that accompany the option.

For more information about available options, visit the HP Web site at http://h30143.www3.hp.com/configure2.cfm

3 Specifications

Table 3-1 HP Compaq t5135/t5530 Thin Client

Dimensions		
Width (front to back)	7.31 in.	18.57 cm
Height (top to bottom)	7.31 in	18.57 cm
Depth	2.06 in.	5.24 cm
Approximate Weight	2.9 lb	1.3 kg
Temperature Range (fanless design)*		
Operating**	50° to 104° F	10° to 40° C
(max. rate of change is 10° C per hour or 18° F per hour)		
Nonoperating	-22° to 140° F	-30° to 60° C
(max. rate of change is 20° C per hour or 36° F per hour)		
*Specifications are at sea level with altitude derating of 1° C/300m (1.8° F/1000ft) to a maximum of 3Km (10,000ft), with no direct, sustained sunlight. Upper limit may be limited by the type and number of options installed.	** The operating temperature range when the thin client is attached to a flat panel using the HP Quick Release is 50° to 95°F (10° to 35°C).	
Relative Humidity (non-condensing)		
Operating	10–90%	10–90%
(max. wet bulb temperature is 28° C or 84.2° F)	5–95%	5–95%
Nonoperating		
(max. wet bulb temperature is 38.7° C or 101.6° F)		
Maximum Altitude (unpressurized)	10,000 ft	3048 m
Operating		
(max. allowed rate of change is 457m per minute or 1500 ft per minute)		
Nonoperating	30,000 ft	9144 m
(max. allowed rate of change is 457m per minute or 1500 ft per minute)		
Power Supply	100–240 VAC	100–240 VAC
Operating Voltage Range	50–60 Hz	50–60 Hz
Rated Line Frequency		

Table 3-1 HP Compaq t5135/t5530 Thin Client (continued)

Power Output (maximum)	40 W	40 W
Rated Output Current (maximum)	3.3 A	3.3 A

4 Security provisions

Securing the thin client

The HP Compaq t5135/t5530 thin client is designed to accept a security cable lock. This cable lock prevents unauthorized removal of the thin client, as well as locking the secure compartment. To order this option, visit the HP Web site at http://h30143.www3.hp.com/configure2.cfm.

1. Locate the cable lock slot on the back panel.
2. Insert the cable lock into the slot, and then use the key to lock it.

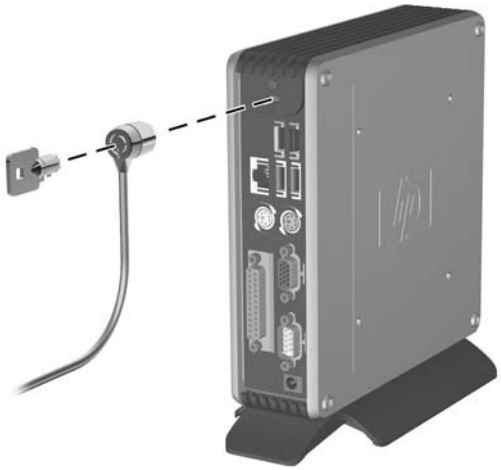

Figure 4-1 Securing the thin client

5 Mounting the thin client

HP Quick Release

The HP Compaq t5135/t5530 thin client incorporates four mounting points on each side of the unit. These mounting points follow the VESA (Video Electronics Standards Association) standard, which provides industry-standard mounting interfaces for Flat Displays (FDs), such as flat panel monitors, flat displays, and flat TVs. The HP Quick Release connects to the VESA-standard mounting points, allowing you to mount the thin client in a variety of orientations.

NOTE When mounting, use the 10 mm screws supplied with the Quick Release Kit.

Figure 5-1 HP Quick Release

To order this option, visit the HP Web site at http://h30143.www3.hp.com/configure2.cfm

To use the HP Quick Release with a VESA-configured thin client:

1. Using four 10 mm screws included in the mounting device kit, attach one side of the HP Quick Release to the thin client as shown in the following illustration.

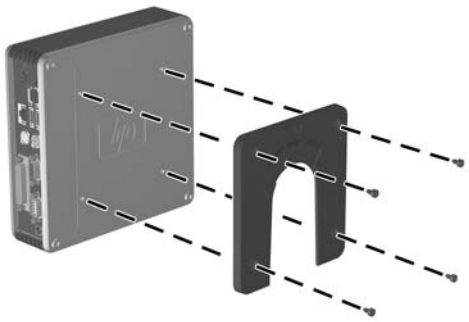

Figure 5-2 Connecting the HP Quick Release to the thin client

2. Using four screws included in the mounting device kit, attach the other side of the HP Quick Release to the device to which you will mount the thin client. Make sure the release lever points upward.

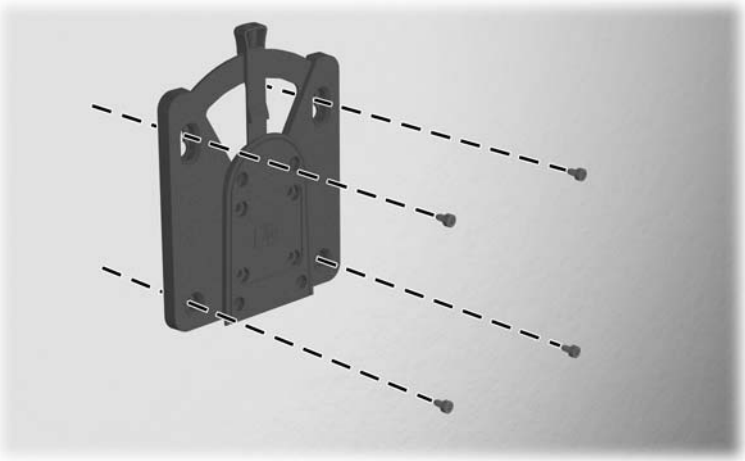

Figure 5-3 Connecting the HP Quick Release to another device

3. Slide the side of the mounting device attached to the thin client (1) over the other side of the mounting device (2) on the device on which you want to mount the thin client. An audible 'click' indicates a secure connection.

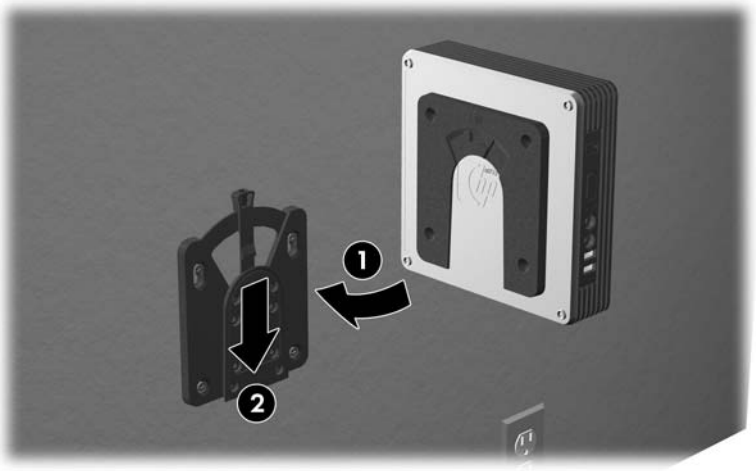

Figure 5-4 Connecting the thin client

NOTE When attached, the HP Quick Release automatically locks in position. You only need to slide the lever to one side to remove the thin client.

CAUTION To ensure proper function of the HP Quick Release and a secure connection of all components, make sure both the release lever on one side of the mounting device and the rounded opening on the other side face upward.

Supported mounting options

The following illustrations demonstrate some of the supported and not supported mounting options for the mounting bracket.

- You can mount a thin client between a flat panel monitor and the wall.

Figure 5-5 Thin client mounted with flat panel on wall

- You can mount the thin client on the back of a flat panel monitor stand.

Figure 5-6 Thin client mounted on back of monitor stand

- You can mount the thin client on a wall.

Figure 5-7 Thin client mounted on wall

- You can mount the thin client under a desk.

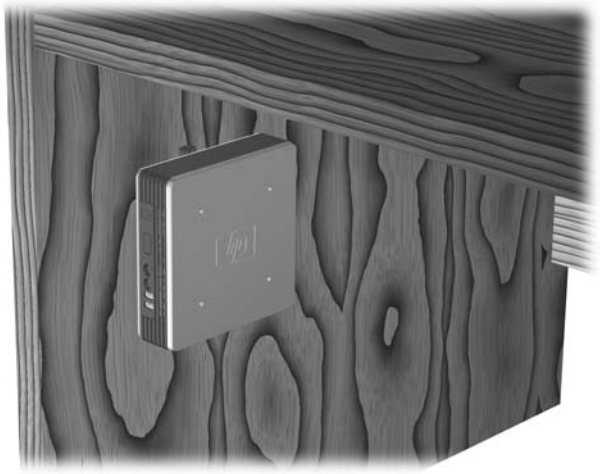

Figure 5-8 Thin client mounted under desk

Non-supported mounting option

CAUTION Mounting a thin client in an non-supported manner could result in failure of the HP Quick Release and damage to the thin client and/or other equipment.

Do not mount the thin client on a flat panel monitor stand, between the panel and the stand.

Figure 5-9 Unsupported mounting position - thin client between stand and monitor

6 Thin client operation

Routine thin client care

Use the following information to properly care for your thin client:

- Never operate the thin client with the outside panel removed.
- Keep the thin client away from excessive moisture, direct sunlight, and extreme heat and cold. For information about the recommended temperature and humidity ranges for the thin client, see Specifications.
- Keep liquids away from the thin client and keyboard.
- Turn off the thin client and wipe the exterior with a soft, damp cloth as needed. Using cleaning products may discolor or damage the finish.

Supported orientations

HP supports the following orientations for the thin client.

CAUTION You must adhere to HP-supported orientations to ensure your thin clients function properly.

- You can place the thin client vertically using the supplied stand.

Figure 6-1 Vertical orientation

- You can lay the thin client horizontally on its rubber feet.

Figure 6-2 Horizontal orientation

- You can lay the thin client under a monitor stand with at least one inch of clearance.

Figure 6-3 Under monitor stand

Non-supported orientation

HP does not support the following orientation for the thin client.

CAUTION Non-supported placement of thin clients could result in operation failure and/or damage to the devices.

CAUTION Thin clients require proper ventilation to maintain operating temperature.

Do not put thin clients in drawers or other sealed enclosures. Thin clients require proper ventilation to maintain operating temperatures.

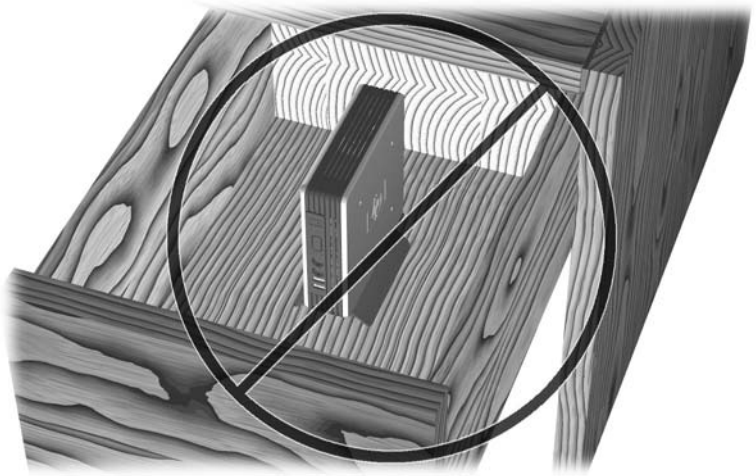

Figure 6-4 Do not put thin clients in drawers or other sealed enclosures

7 Electrostatic discharge

A discharge of static electricity from a finger or other conductor may damage system boards or other static-sensitive devices. This type of damage may reduce the life expectancy of the device.

Preventing electrostatic damage

To prevent electrostatic damage, observe the following precautions:

- Avoid hand contact by transporting and storing products in static-safe containers.
- Keep electrostatic-sensitive parts in their containers until they arrive at static-free workstations.
- Place parts on a grounded surface before removing them from their containers.
- Avoid touching pins, leads, or circuitry.
- Always be properly grounded when touching a static-sensitive component or assembly.

Grounding methods

There are several methods for grounding. Use one or more of the following methods when handling or installing electrostatic-sensitive parts:

- Use a wrist strap connected by a ground cord to a grounded Thin Client chassis. Wrist straps are flexible straps with a minimum of 1 megohm +/- 10 percent resistance in the ground cords. To provide proper grounding, wear the strap snug against the skin.
- Use heelstraps, toestraps, or bootstraps at standing workstations. Wear the straps on both feet when standing on conductive floors or dissipating floor mats.
- Use conductive field service tools.
- Use a portable field service kit with a folding static-dissipating work mat.

If you do not have any of the suggested equipment for proper grounding, contact an HP authorized dealer, reseller, or service provider.

NOTE For more information about static electricity, contact an HP authorized dealer, reseller, or service provider.

8 Shipping information

Shipping preparation

Follow these suggestions when preparing to ship the thin client:

1. Turn off the thin client and external devices.
2. Disconnect the power cord from the electrical outlet, then from the thin client.
3. Disconnect the system components and external devices from their power sources, then from the thin client.
4. Pack the system components and external devices in their original packing boxes or similar packaging with sufficient packing material to protect them.

NOTE For environmental nonoperating ranges, see Specifications.

Important service repair information

In all cases, remove and safeguard all external options before returning the thin client to HP for repair or exchange.

In countries that support customer mail-in repair by returning the same unit to the customer, HP makes every effort to return the repaired unit with the same internal memory and flash modules that were sent.

In countries that do not support customer mail-in repair by returning the same unit to the customer, all internal options should be removed and safeguarded in addition to the external options. The thin client should be restored to the **original configuration** before returning it to HP for repair.